

# WATER QUALITY MEMORANDUM

Utah Coal Regulatory Program

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February 18, 2010

TO: Internal File

THRU: James D. Smith, Permit Supervisor *JS* 02/24/10

FROM: Steve Christensen, Environmental Scientist *SCC*

RE: 2008 First Quarter Water Monitoring, Genwal Resources, Inc., Crandall Canyon Mine, WQ08-1, Task ID #3138

Water monitoring requirements for the Crandall Canyon Mine can be found in Sections 7.31.21, *Ground Water Monitoring Plan* and 7.31.22, *Surface Water Monitoring Plan*. Additional information can be found in Tables 7-4, 7-5, 7-8, 7-9 and 7-10.

On August 6<sup>th</sup>, 2007, a major mine bump/bounce occurred in the Main West pillar section causing much of the working area of the mine to collapse. As a result, mining operations at the mine have ceased. The in-mine dewatering pumps were removed and temporary concrete block seals were constructed in the north portals.

Based up on Division of Oil, Gas and Mining records (the Division), the mine encountered significant amounts of ground water and began pumping activities in 1996. Over a 14-year period, the mine pumped an average of 742 gallons of water from the mine workings. Following the mine collapse and subsequent sealing of the portals, the mine did not discharge for the months of October, November and December of 2007. However, by mid January of 2008 the mine had filled to the extent that the mine-water had found it's way around the temporary seals and began to discharge uncontrolled to the surface.

During the 1<sup>st</sup> quarter of 2008, initial spikes in Total Dissolved Solids (TDS) and Total Iron (T-Fe) were detected during Utah Pollutant Discharge Elimination System (UPDES) sampling. See 'data irregularity' discussion below.

1. Was data submitted for all of the MRP required sites? YES ☒ NO ☐

## *Springs*

*The approved MRP requires the monitoring of 24 springs each quarter. Of these 24*

*springs, 9 require laboratory water quality analysis (See Table 7-4). The remaining 15 springs require quarterly monitoring of field parameters (flow, pH, specific conductance and temperature).*

The Permittee submitted all required samples for the spring sites.

### ***Streams***

*The approved MRP requires the monitoring of 12 surface water/stream sites. Of these 12 surface water/stream sites, 9 require laboratory water quality analysis (See Table 7-8). The remaining 3 sites require quarterly monitoring of field parameters (flow, pH, specific conductance, temperature and dissolved oxygen).*

The Permittee submitted all required samples for the stream sites.

### ***Wells***

*The MRP requires the Permittee to monitor 7 wells during the second quarter. All require full laboratory analysis according to Table 7-4. However, due to the mine disaster on August 6<sup>th</sup>, 2007, the active mine-workings have been temporarily sealed off thus rendering the wells inaccessible.*

### ***UPDES***

*The UPDES Permit/MRP (UT000024368) requires monthly monitoring of 2 outfalls: 001 and 002. Outfall 001 is associated with the discharge from the primary sediment pond at the main mine facility. Outfall 002 is associated with the mine-water discharge that reports directly to Crandall Creek.*

The Permittee submitted all required samples for the UPDES sites.

2. Were all required parameters reported for each site? YES ☒ NO ☐
3. Were any irregularities found in the data? YES ☒ NO ☐

As discussed above, the mine-water began to discharge from around the temporary seals of the north portals in approximately mid-January (exact date unknown). The Permittee constructed a series of drains adjacent to the temporary seals and was successful in routing the mine-water discharge directly into Crandall Creek as was done during active mining operations.

Six sampling events of the mine-water discharge were conducted this quarter. 4 of the 6 sampling events produced analytical results that were outside of the compliance levels established by the Permittee's UPDES discharge permit.

The compliance level for T-Fe (as established by the UPDES discharge permit) is 1 part-per-million (ppm). The sampling events of January 28<sup>th</sup> and March 3<sup>rd</sup> produced T-Fe analytical results of 1.491 ppm and 1.85 ppm respectively.

The compliance level for TDS (as established by the UPDES discharge permit) is 1,200 ppm. The sampling events of January 10<sup>th</sup> and January 28<sup>th</sup> produced analytical results of 1,523 ppm and 1,108 ppm respectively.

At this point, it's unclear as to what's causing the spikes in TDS and T-Fe. Re-entering the mine is not an option. Additionally, the TDS and T-Fe data collected during this quarter is insufficient to determine what (if any) trend is being produced as a result of the mine-water discharge. Additional monitoring/data collection is necessary.

**4. On what date does the MRP require a five-year re-sampling of baseline water data.**

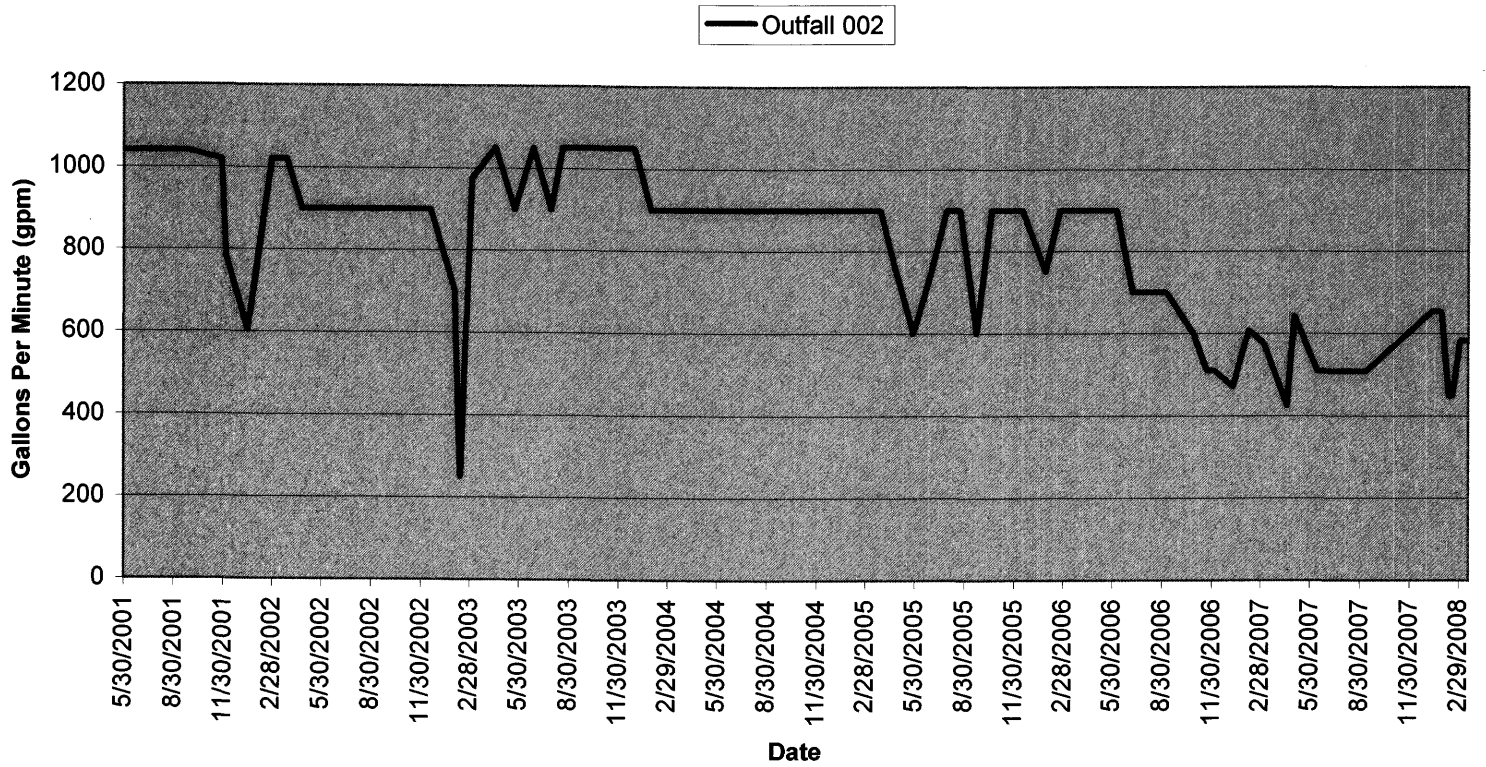
Page 7-33 of the MRP states that groundwater samples collected during the low flow period (typically the 4<sup>th</sup> quarter) every 5 years will be analyzed for baseline parameters (See Tables 7-5). The 4<sup>th</sup> quarter of 2010 will be the next sampling event where baseline data will be required.

Page 7-35 of the MRP states that surface water samples collected during the low flow period every 5 years will be analyzed for baseline parameters (See Table 7-9). The 4<sup>th</sup> quarter of 2010 will be the next sampling event where baseline data will be required.

**5. Based on your review, what further actions, if any, do you recommend?**

Continued data collection and monitoring of the mine-water discharge will be necessary to determine if a trend is emerging relative to TDS and T-Fe. The data will be essential in determining whether the mine-water discharge remains in compliance with the UPDES permit.

## Mine-Water Discharge



## Total Dissolved Solids (TDS)

